

Oct 25



Work Order ID 75209

75209

Item ID: D212-664-107

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: *W*

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
----------	--------------

D212-664-147	Rev B (DEO)
--------------	-------------

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D212-664-107 CHG002

110

0.00

110

Packaging

Packaging

Memo

0.00

Packaging

120

0.00

120

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-107 using CNC bender program 212-107

5/11/11

003

*★ SEE W/D CHG 44 BACK
STAPLED TO ~~W/D~~ W/D*

*For MLT
11-11-10*

ATO

DP

11-10-21

DP

11-10-21

Work Order ID 75209

October-19-11 1:31:36 PM

75209



Item ID: D212-664-107

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00

130

QC

Memo

0.00

Quality Control

POSITIVE RECALL

EFFECTIVE 11/10/27

AUTH

RELEASED

DATE 11/10/27

140

Crosstubes

0.00

140

Crosstubes

Memo

0.00

Crosstubes

1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***

2-Position cuffs on tube ensure proper positioning

3-Drill tube as per dwg using DT8577 location #7 & # 212 ULF using jig DT8548 and DT8549 as per QSI 10

4-Transfer drill rivet holes from cuff into tube.

5-Identify cuff position and Batch # on each and identify tube as per dwg D212-664-107.

6- Inspect surface damage

7- Deburr and realodine cuff.

11-10-27

11-10-27



Work Order ID 75209

October-19-11 1:31:36 PM

75209

Page 3

Item ID: D212-664-107

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: Date:

Tooling: Date:

Run Start *NR1*

QC: Date:

SPC (Y/N): Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

150

Crosstubes Chemical Conversion

0.00

~~11/10/24~~

MO

11/10/24

150

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

160

QC3- Inspect Part Finish

0.00

160

QC

Memo

0.00

Quality Control

Sukol/27

~~25 11-10-24~~

170

QC5- Inspect part completeness to step on W/O

0.00

170

QC

Memo

0.00

Quality Control

Sukol/27

POSITIVE RECALL

EFFECTIVE 11/10/24

AUTH

RELEASED

DATE

11/10/27

Work Order ID 75209

October-19-11 1:31:36 PM

75209

Page 4

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursTool ID Tool # Plan Accept Reject Reject Insp.
Code Qty Qty Number Stamp

180

Outsource process - NDT per QSI038 4.1

0.00

180

Outsource2

0.00

Outsource process - NDT

MemoLiquid Penetrant Inspection as per QSI 038 Or
Issue P/O 15240 LPI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

11-10-25

190

0.00

190

Packaging

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

11-10-25

200

QC5- Inspect part completeness to step on W/O

0.00

200

QC

Memo

0.00

Quality Control

Inspect for damage & ensure results are as per Dwg D212-664-107

11-10-25

Work Order ID 75209

October-19-11 1:31:36 PM

75209

Page 5

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursTool ID Tool # Plan
Code Accept Reject Reject Insp.
Qty Qty Number Stamp

210

0.00

210

Crosstubes

Crosstubes

Memo

0.00

1-Rivet Cuffs as per Dwg D212-664-147. with Sika flex in Between tube & Cuff
A/R SIKAFLEX -241/-291 BATCH: 119399

211/212

215

0.00

215

QC5- Inspect part completeness to step on W/O

QC


Memo

0.00

Quality Control

25 11-10-25
PTO
ad 11/11/01 (1)

Dart Aerospace Ltd

W/O: 75209		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
11.10.26	211	TUBE WAS LOAD TESTED TO 3700 lb. IN DEFLECTION TEST RIG PER TR-0412-664-10 REV. B. THIS TEST LOAD IS BELOW THE YIELD STRENGTH OF THE MAT'L AND REPRESENTS THE LOAD THE CRUSSTUBE WOULD EXPERIENCE FROM A SINGLE LANDING. THE TUBE IS THEREFORE STILL ACCEPTABLE	GP	11.10.25	1	 11.10.26	S ululco	
11.10.26	100	X TUBE IS AT <u>CHG 003</u> . ENSURE ALL PAPER WORK/LABELS SAY CHG 003. ADD DSI 9582 TO PAPERWORK (GET FROM ENGINEERING, CP)	MLJ	11/11/10		GP 11.10.26 DSI 642	S ululco	

Part No: D212-664-107 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Dart Aerospace Ltd

W/O: 75209		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
11.10.27	212	RE-MEASURE HEIGHT & WIDTH OF XTUBE	<i>[Signature]</i>	11.10.27	1	<i>[Signature]</i> 11.10.27 BS/642	<i>[Signature]</i> u/utuf

Part No: D212-664-107 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Work Order ID 75209

75209

Page 6

Item ID: D212-664-107

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID Tool # Plan Accept Reject Reject Insp.
Code Qty Qty Number Stamp

220

0.00

220

SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

25 11-11-01

PRIME:

Start Time: 10:00

Finish Time: 11:00

PAINT:

Start Time: 3:00

Finish Time: 4:00

230

QC14- Inspect Spray Paint

0.00

230

QC

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

11-11-02 11

Work Order ID 75209

October-19-11 1:31:36 PM

75209



Page 7

Item ID: D212-664-107

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

240

0.00

240

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1- Assemble as per Dwg D212-664-147

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper.
clean the area with 4105S wash 'n' wipe

2-Install supports with Proseal 890 per DSI9563 and QSI 015

A/R Proseal 890 Batch: 119396

3- Torque bolts as per dwg 11/11/10

11-11-09

250

QC5- Inspect part completeness to step on W/O

0.00

250

QC

Memo

0.00

Quality Control

5-11-10

Work Order ID 75209***75209***

Page 8

Item ID: D212-664-107

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Run Start ***NR1***

Approvals:

Process Plan:

Date:

Tooling:

Date:

Stop

NR2

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

255

Pick Kit

0.00

255

Packaging

Memo

0.00

Packaging

Sp 11-11-11

260

QC4- 100% Inspect kits for completeness

0.00

260

QC

Memo

0.00

Quality Control

Sulu

REUC

270

Packaging

0.00

270

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D212-664-107

POSITIVE RECALL

EFFECTIVE

AUTH

RELEASED

DATE

R. 11.11.11

DSI9582

Work Order ID 75209

October-19-11 1:31:36 PM

75209

Page 9

Item ID: D212-664-107

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/24/11 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
---------	--------	-----------	------------	------------	---------------	-------------

280

QC21- Final Inspection - Work Order Release

0.00

280

QC

Memo

0.00

Quality Control

11/11/14
MF
11-11-11

Picklist Print

October-19-11 8:37:33 AM

Page 1

Work Order ID: 75209

Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11

Required Date: 10/24/11

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 07.09.12 EC verified by: JLM
 IPP Rev:B ECN 1100 08-01-11 DD verified by: EC
 IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec
 DD verf:EC IPP Rev:D 10.05.27 added pick kit
 IPP Rev:E 11.10.17 added SEQ 215 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664-107TRN		Manufactured	No			140	Each	4.0000	1	1			
Crosstube Turning Detail													

D3659-1
CUFF

Manufactured No

Location	Loc Qty	Loc Code
LG 75210	1	
74250	1	
LG046	3	
74249	1	
74569	1	
74570	1	

220 Each 3.0000 2 2

Location	Loc Qty	Loc Code
ST477	3	
67005	3	

CR3212-4-06
CHERRY RIVET

Purchased No

Location	Loc Qty	Loc Code
ST311	730	
112492	18	
112794	712	

240 Each 730.0000 44 44

① DP 11-10-21

RT 11-10-22

11-10-31

Picklist Print

October-19-11 8:37:34 AM

Work Order ID: 75209

Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11

Required Date: 10/24/11

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured

No

240

Each

117.5600

4

4

RUBBER CUSHION

Location

Loc Qty

Loc Code

LG

107.76

67353

3

68893

6

70113

0.56

71354

0.2

74113

98

LG055

9.8

72967

9.8

MS21920-25

Purchased

No

240

Each

42.0000

4

4

Clamp(per MIL-DTL-8783C)

Location

Loc Qty

Loc Code

LG

36

113281

0

113282

0

118142

4

118183

32

LG050

6

116264

2

117998

4

D2893-1

Manufactured

No

240

Each

16.0000

2

2

2.75 Support

Location

Loc Qty

Loc Code

LG052

16

72865

16

D3428-1

Manufactured

No

260

Each

23.0000

Placard

Location

Loc Qty

Loc Code

ST053

23

72048

3

73498

20

October-19-11 8:37:34 AM

Shop Packet Print

Picklist Print

October-19-11 8:37:34 AM

Page 3

Work Order ID: 75209

Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 10/19/11

Required Date: 10/24/11

Start Qty: 1.00

Required Qty: 1.00

AN6-35A
BOLT

Purchased

No

260

Each

56.0000

Location

Loc Qty

Loc Code

ST343

56

118422

26

118838

30

Purchased

No

260

Each

57.0000

Location

Loc Qty

Loc Code

ST343

57

118012

1

118422

26

118838

30

Purchased

No

260

Each

1,756.0000

Location

Loc Qty

Loc Code

ST300

756

117677

100

118284

8

118927

48

118968

600

ST518

1000

119075

1000

Purchased

No

260

Each

0.0000

AN960JD616
Washer

NAS1149D0663J

18

18

11/19/075 SP 11-11-11

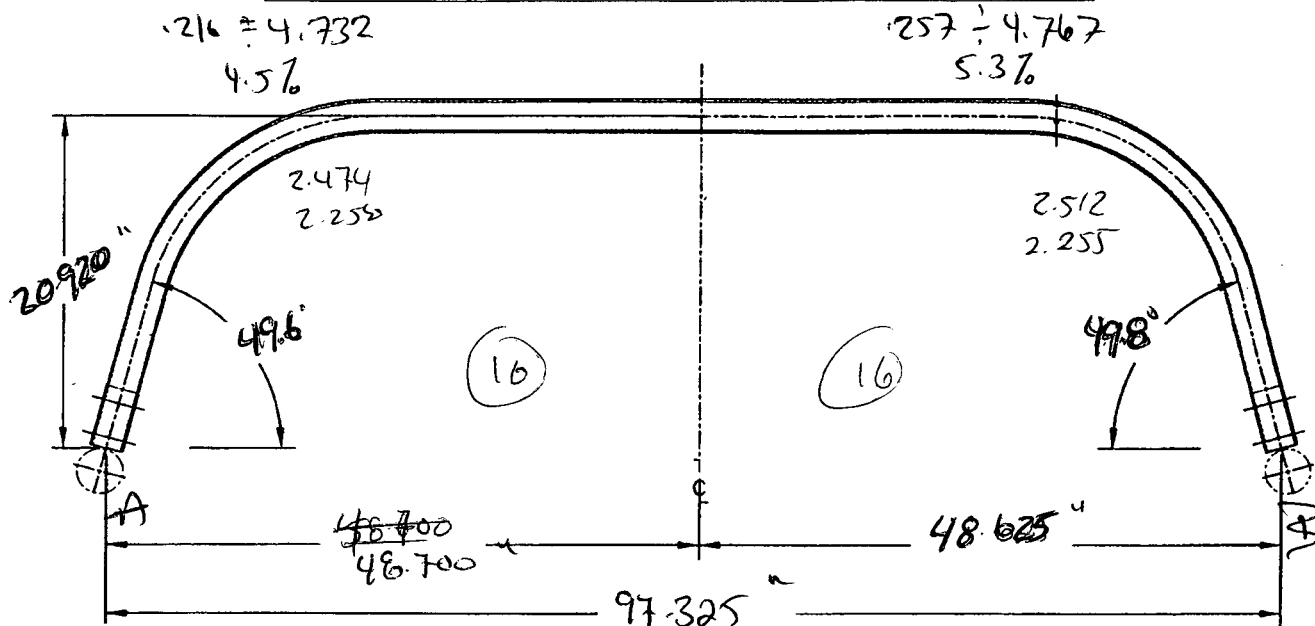
October-19-11 8:37:34 AM

Shop Packet Print

Page 3

DART AEROSPACE LTD		Work Order:	15202
Description: Crosstube Low Fwd (205/212/412)		Part Number:	D212-664-107
Inspection Dwg: D212-664-147 Rev: B		Page 1 of 1	

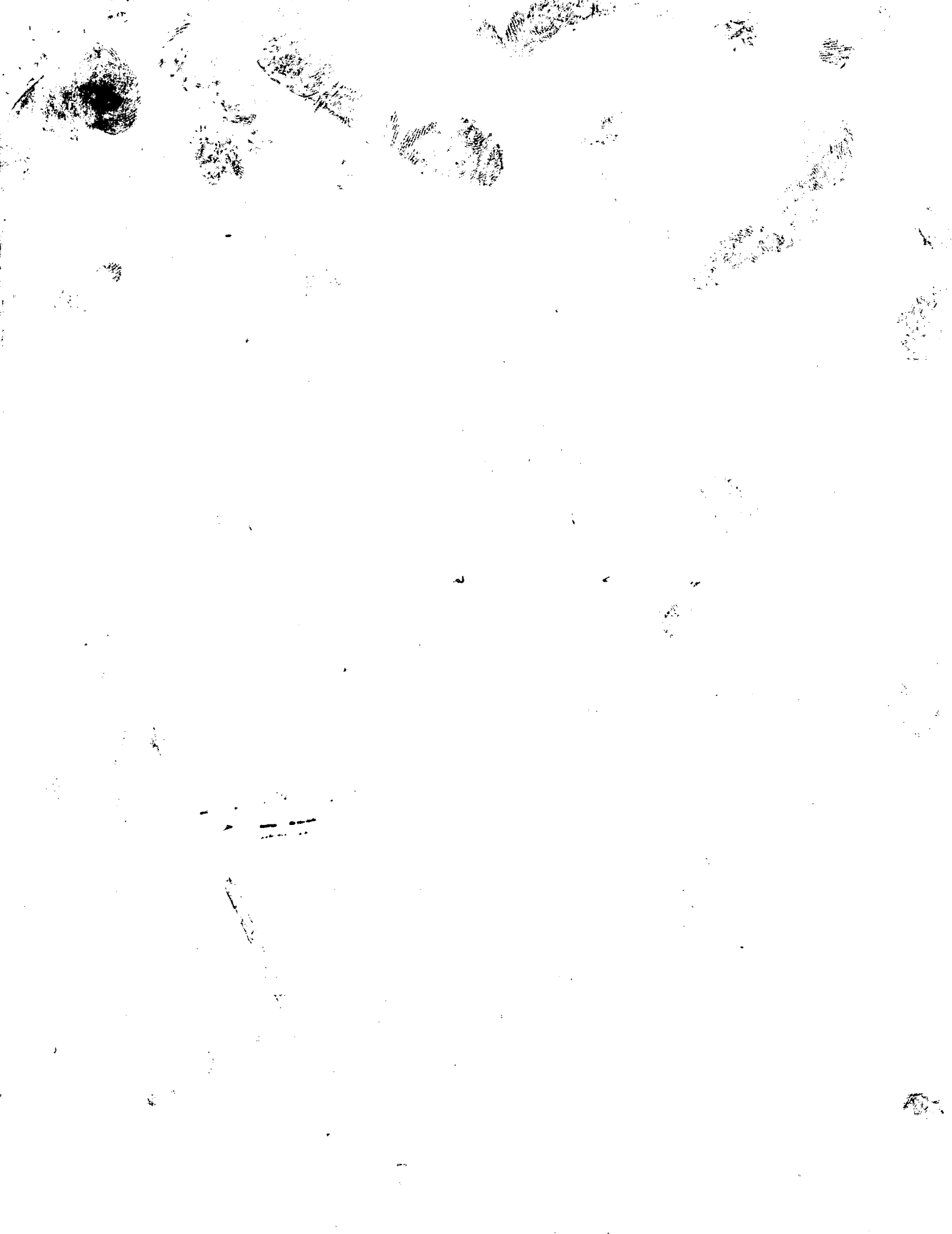
Required Dimension	Min	Max
Height	20.79	21.05
1/2 Span	48.55	48.81
Angle	49	52
Total Span	97.1	97.62



Comments
Side A = 4.5% crush @ 16 Passes
Side B = 5.3% crush @ 16 Passes
take to good use Approved by DS. S

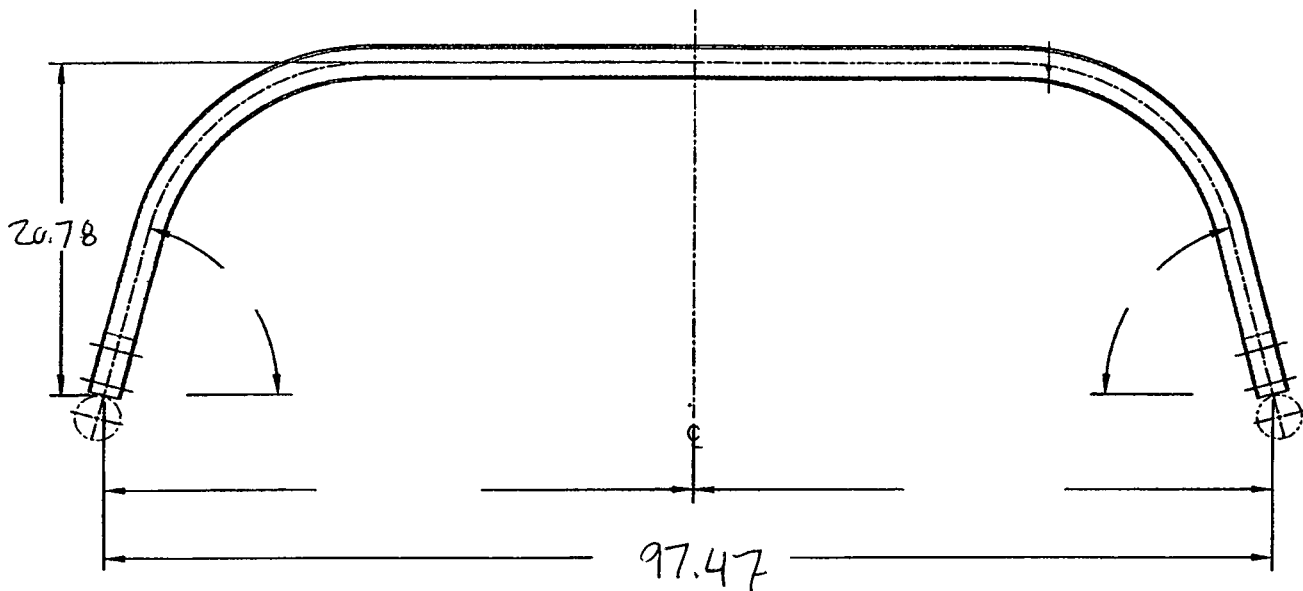
QC15 Inspection	S
Date	11/10/27

Rev	Date	Change	Revised by	Approved
A	08.02.29	New Issue	KJ/JM	
B	10.01.21	Dwg Rev updated	KJ	



DART AEROSPACE LTD		Work Order:	
Description: Crosstube Low Aft (205/212)		Part Number:	D212-664-207
Inspection Dwg: D212-664-247 Rev: B		Page 1 of 1	

Required Dimension	Min	Max
Height	18.16	18.42
1/2 Span	48.55	48.81
Angle	49	52
Total Span	97.1	97.62



Comments
<i>Height in tolerance. Width in tolerance. Height 0.010 below tol. Acceptable. JP 11.10.27</i>

QC15 Inspection	<i>JP</i>
Date	<i>11.10.27</i>

Rev	Date	Change	Revised by	Approved
A	08.02.29	New Issue	KJ/JM	
B	10.04.01	Dwg Rev updated	KJ <i>[Signature]</i>	<i>[Signature]</i>

Item	Qty -147	Qty -147B	Part Number	Description
1	X		D212-664-147	CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)
2		X	D212-664-147B	CROSSTUBE ASSEMBLY (214 LOW FWD)
3	1	1	D6019-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	2	2	D3659-1	CUFF
7	4	4	MS21920-25	CLAMP (OR MS21920-26)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6019-128
FINISHED LENGTH = 126.528-0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER 'D212-664-XXX' AND BATCH NUMBER ON INSIDE OF CUFF
USING VIBRATING STYLUS.
- 7) WEIGHT: D212-664-147 = 24.2 lbs (PER IIN-D212-664)
D212-664-147B = 24.2 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD
BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6%
BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF
D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER
INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1
SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE
SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.
DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE
UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS
NOT BOTTOMED-OUT AFTER TORQUING.
- 16) INSTALL D3659-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF
SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE.
SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

USE D6005

CP 11.10.21

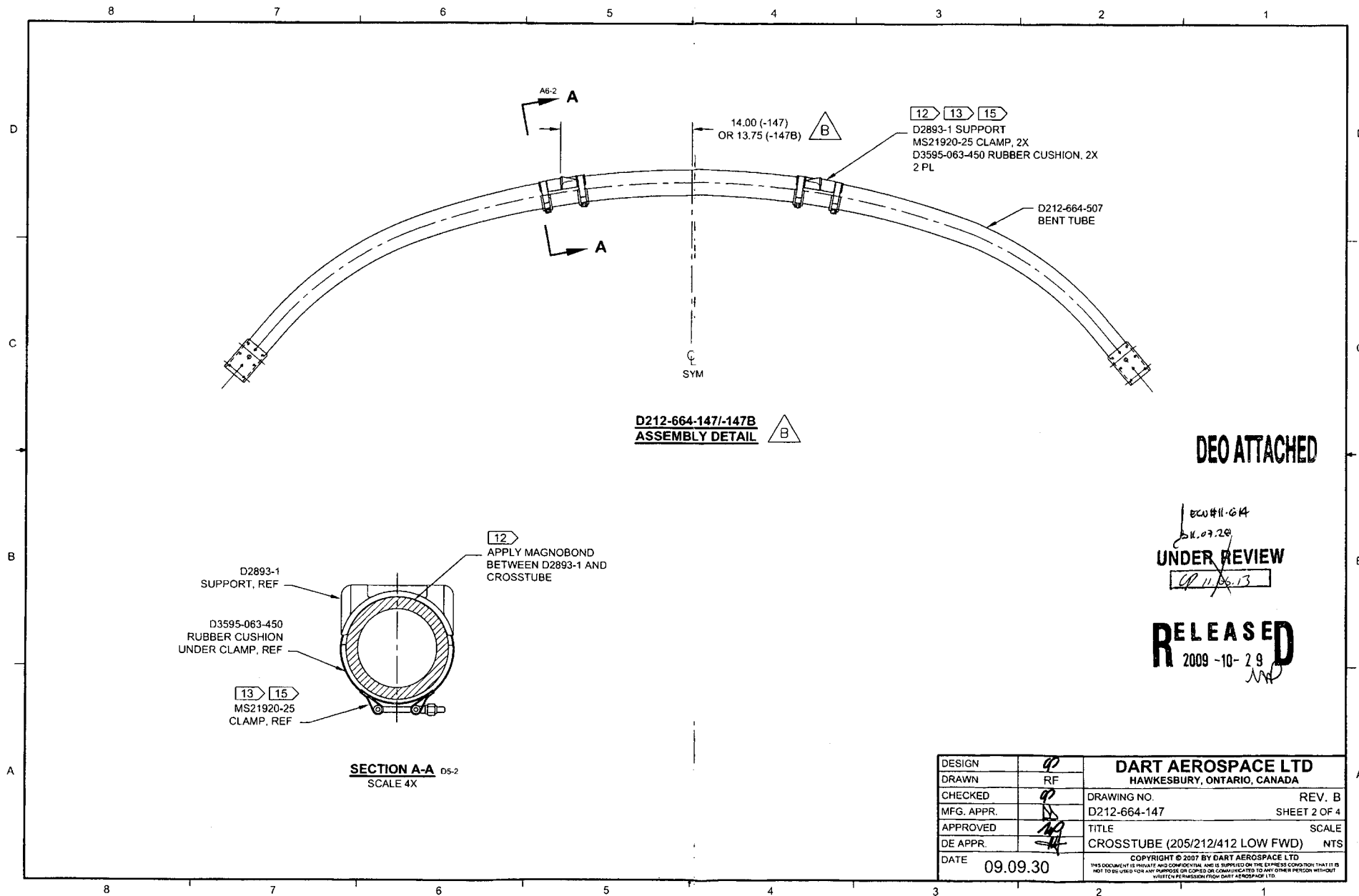
W/075209

DEO ATTACHED

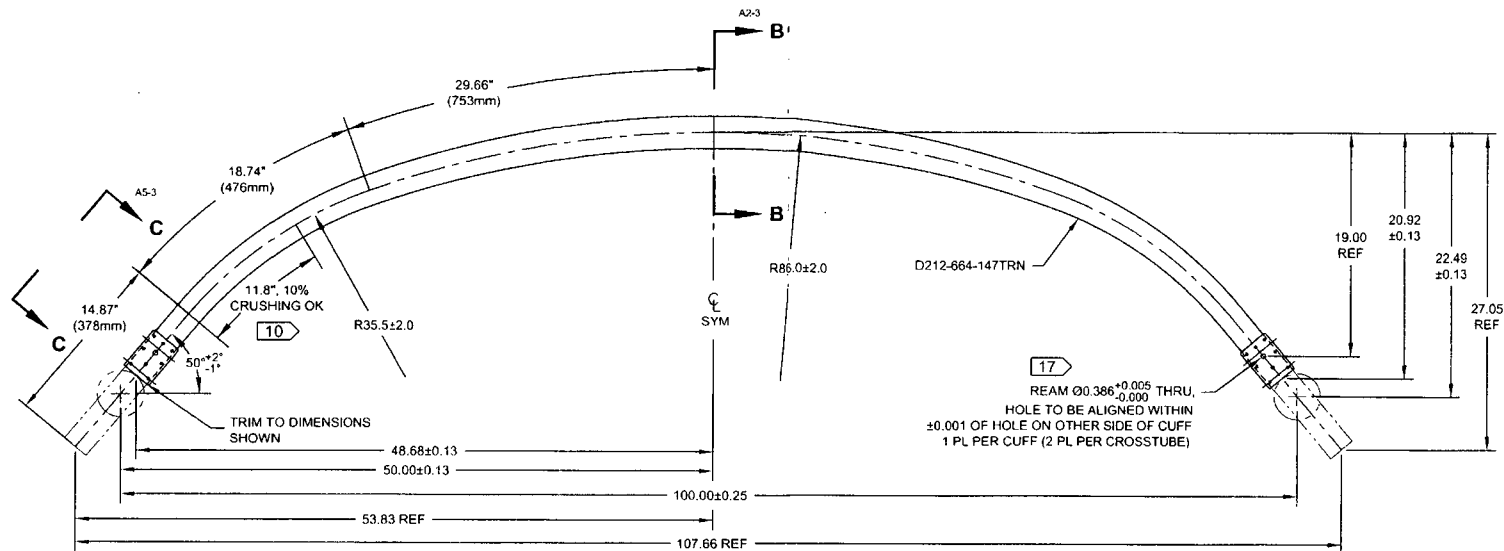
Per EOW #11.64
11.07.28
UNDER REVIEW
CP 11.08.13

RELEASED
2009-10-29

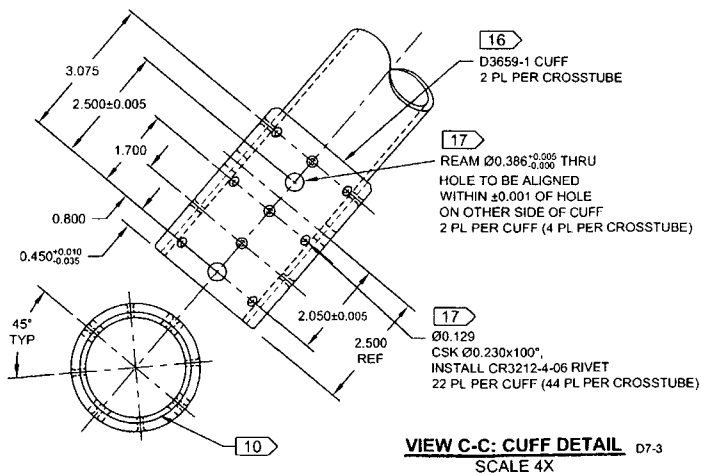
B	REVISE GENERAL NOTES/PART LIST: UPDATE TO CURRENT STANDARDS: ADD -147B (ZN C4-2, D4-2)	RF	09.09.30
A	NEW ISSUE	CP	07.07.07
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. B
CHECKED	RF	D212-664-147	SHEET 1 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DE APPR.	RF	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	
DATE	09.09.30		



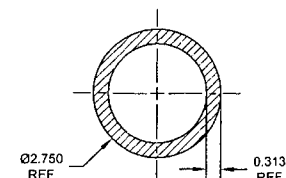
DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	RF	D212-664-147	SHEET 2 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL. IT IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			



D212-664-507
BENDING AND DRILLING DETAIL 10 B



VIEW C-C: CUFF DETAIL D7-3
 SCALE 4X



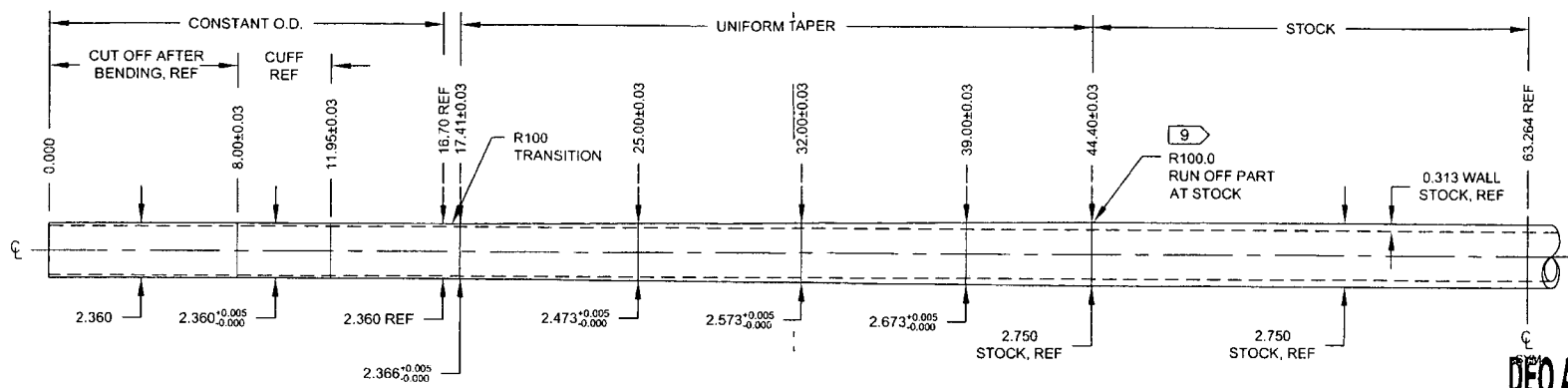
SECTION B-B D5-3
 SCALE 4X

DEO ATTACHED

50011-614
 09.09.28
 UNDER REVIEW
 09/09/13

RELEASED
 2009-10-29

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	RF	D212-664-147	SHEET 3 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			



D212-664-147TRN
TURNING DETAIL

DEO ATTACHED

ECO #1-614
 11.07.26

UNDER REVIEW
 R. 11.06.13

RELEASED
 2009-10-29

DESIGN	90	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	90	DRAWING NO.	REV. B
MFG. APPR.	DS	D212-664-147	SHEET 4 OF 4
APPROVED	90	TITLE	SCALE
DE APPR.	90	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

DRAWING NO. D212-664-147	TITLE CROSSTUBE ASS'Y (205 LOW FWD)	REV. B	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D212-664-147-B-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>188</i>	APPROVED <i>WP</i>		DE APPR. <i>14</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -147	Qty -147B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
WP

DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D212-664 Rev. G OR LATER
AND INSTRUCTIONS FOR CONTINUOUS AIRWORTHINESS ICA-D212-664 Rev. 8 OR LATER

REF. CANADIAN STC: SH01-9

REF. FAA STC: SR01298NY

REF. EASA STC: EASA.IM.R.S.01304

FOR D212-664-107 & D212-664-107B CROSSTUBES AT CHG 003, A HEAVIER WALL EXTRUSION WAS USED TO MANUFACTURE THE PARTS BECAUSE OF PROCUREMENT ISSUES WITH THE STANDARD MATERIAL. THE REVISED WEIGHT AND BALANCE IS GIVEN BELOW:

Aircraft	DART CROSSTUBE P/N	DESCRIPTION	WEIGHT	STA	MOMENT
205, 210, 212, 214, UH-1H	D212-664-107 D212-664-107B @ CHG 003	Standard Fwd	28.7 lb (13.0 kg)	71.5 in (1.82 m)	2052 in lb (23.7 m kg)

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
DAO # 01-O-01



APPROVED

BY: 
D. SHEPHERD (DE # 02)

DATE: 11.10.26

CERT. NO.: SH01-9

ISSUE NO.: 3

A	NEW ISSUE	CP	11.10.26
REV.	DESCRIPTION	BY	DATE
DESIGN	qp	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	qp		
CHECKED	ASS	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9582	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE WEIGHT DEVIATION	NTS
DATE	11.10.26	COPYRIGHT © 2011 BY DART AEROSPACE LTD <small>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

REFERENCE ONLY

DART AEROSPACE LTD.

IIN-D212-664

Page 23 of 25

5.2 STANDARD GEAR CROSSTUBES

Item	-107	-207	-209	Part Number	Description
	X			D212-664-107	CROSSTUBE INSTALLATION, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K STANDARD FWD
		X		D212-664-207	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K STANDARD AFT
			X	D412-664-209	CROSSTUBE INSTALLATION, 412 STANDARD AFT
6	1			D212-664-147	CROSSTUBE ASSEMBLY, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K STANDARD FWD
7		1		D212-664-247	CROSSTUBE ASSEMBLY, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K STANDARD AFT
8			1	D412-664-249	CROSSTUBE ASSEMBLY, 412 STANDARD AFT
10	2			* D2893-1	SUPPORT
11	4			* D3595-063-450	RUBBER CUSHION
12	4			* MS21920-25	CLAMP (OR MS21042-26)
13	4			AN6-35A	BOLT
14	4			AN6-36A	BOLT
15	6			MS21042L6	NUT (OR MS21042-6)
16	18			AN960JD616	WASHER
20		2		* D2940-1	SUPPORT
21		4		* D3595-063-530	RUBBER CUSHION
22		4		* MS21920-28	CLAMP (OR MS21042-30)
23		4		AN6-40A	BOLT
24		2		AN6-41A	BOLT
25		6		MS21042L6	NUT (OR MS21042-6)
26		18		AN960JD616	WASHER
30			1	* D2896-1	SUPPORT
32			2	* D3595-063-570	RUBBER CUSHION
33			4	* MS21920-28	CLAMP
34			2	* MS21920-30	CLAMP (OR MS21042-32)
35			4	AN6-40A	BOLT
36			2	AN6-41A	BOLT
37			6	MS21042L6	NUT (OR MS21042-6)
38			18	AN960JD616	WASHER
39			2	* D3189-1	CHAFING SHIELD
45	2			* D3659-1	CUFF
46		2	2	* D3660-1	CUFF
47	44	44		* CR3212-4-06	RIVET (M7885/3-4-06)
48			44	* CR3212-4-07	RIVET (M7885/3-4-07)
50	1	1		D3428-1	PLACARD

*REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-147/-247 OR D412-664-249 ASSEMBLIES ABOVE
NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AAI SKIDTUBES.

• COPYRIGHT © 2001 BY DART AEROSPACE LTD •
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: G
Date: 11.08.30

Part Number D212-664-107
Description CROSSBEE LOW FWD (204/205/212)

Part Number D212-664-107

Description CROSSTUBE LOW FWD (204/205 212)

[illegible]



RAPPORT D'INSPECTION PAR RESSUAGE

P-11784

PAGE 1 DE 1

CLIENT	Dart Aerospace.	DATE	24 Oct. 2011	HEURE	AM <input checked="" type="checkbox"/> PM <input type="checkbox"/>
ATTENTION	Mme. Dinda Lucelle.	N° TRAVAIL ACUREN	189-11-02375		
ADRESSE	1270 Aberdeen st. Halesbury	N° CLIENT PO/WO	15240		
	Ont. K6A 1K7	SITE DE TRAVAIL	Dart usine.		
		ACCEPTATION STD.	Asm 1417/ISI 038	DATE/RÉV.	05
PROJET	Crosstubes inspection and. stud.				
ITEM(S) EXAMINÉ	6 x Crosstubes and. 5 x studs				

DESCRIPTION DES TRAVAUX	N° PROCÉDURE	LT-002	DATE/RÉV.	2007	N° TECHNIQUE	LT-002	DATE/RÉV.	2007
N° ITEMS					MATÉRIEL	Aluminium/Steel	ÉPAISSEUR	Different
DESCRIPTION	100% Inspection (liquid. Penetrant) on surface. (external) on crosstubes (6) and. surface external on stud. (5)							

DÉTAILS DES INSPECTIONS							
MÉTHODE :	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> LAVABLE À L'EAU	<input type="checkbox"/> MÉTHODE DISSOLVANT	<input type="checkbox"/> PRÉ-ÉMULSIONNANT		
MARQUE :	Magnaflux		LUM. NOIRE S/N 16440	<input type="checkbox"/> PUISS. > 1000 µ W/cm²	<input type="checkbox"/> AMBIANT < 2 fc		
PÉNÉTRANT :	Zygo ZL67	TEMPS PÉNÉTRATION MIN.	10 MIN.	ÉQUIP. LUMIÈRE	<input type="checkbox"/> LAMP. POCHÉ	<input type="checkbox"/> LAMP. CULASSE	<input type="checkbox"/> PUISS. > 100 fc @ SURFACE
DISSOLVANT PÉNÉTRANT	H2O	TEMPS SÉCHAGE MIN.	> 10 MIN.	AUTRES	LABINO (MODEL)		
RÉVÉLATEUR	SAD-52	TEMPS PÉNÉTRATION MIN.	10 MIN.	MÈTRE LUM.	N/S	DATE CAL DUE	
TYPE RÉVÉLATEUR	<input checked="" type="checkbox"/> NON AQUEUX	<input type="checkbox"/> AQUEUX	<input type="checkbox"/> SEC				

SURFACE INSPECTÉE					
CONDITION SURFACE	<input type="checkbox"/> MEULÉE	<input type="checkbox"/> SOUDÉE	<input type="checkbox"/> MACHINÉE	<input type="checkbox"/> GRENAILLÉE	<input checked="" type="checkbox"/> MÉTAL PROPRE
TEMPÉRATURE SURFACE	<input type="checkbox"/> < - 4°C/ 20°F	<input type="checkbox"/> - 4°C/ 20°F DE 10°C/50°F	<input checked="" type="checkbox"/> 10°C/50°F DE 52°C/125°F	<input type="checkbox"/> > 52°C/125°F	

RÉSULTATS- (<input type="checkbox"/> MÉTRIQUE <input type="checkbox"/> IMPÉRIAL)									
	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY	QTY
1	Crosstube	WO/ID	74977	✓	Item ID	D212-664-107			
1	"	"	74993	✓	"	"	"	"	"
1	"	"	74978	✓	"	"	"	"	"
1	"	"	74975	✓	"	"	"	"	"
1	"	"	74975	✓	"	"	D206 667 203		
1	"	"	75209	✓	"	"	D206 667 203 D212-664-107		
5	Studs	WO/ID	73459	✓	"	"	D 3688-3		
							PT 11-10-25		

Étendue des Services
L'entente selon laquelle le Groupe Acuren Inc. exécute les services ne concerne que les énoncés par écrit. En aucune circonstance ces services ne s'étendent au-delà de l'exécution des services demandés. Il est entendu que toutes les descriptions, les observations et les expressions d'opinions faites par Acuren reflètent les opinions ou les observations de l'entreprise fondées sur l'information et les hypothèses fournies par le propriétaire/opérateur, et elles ne constituent pas des déclarations ou des garanties ou ne peuvent être interprétées comme constituant. Le Groupe Acuren Inc. n'assume aucune des responsabilités du propriétaire/opérateur, et le propriétaire/opérateur conserve la responsabilité entière des décisions prises en matière d'ingénierie, de fabrication, de réparation et d'usage à partir de l'information ou des données fournies par Acuren en rapport avec les services décrits dans les présentes ne peuvent excéder le coût des services rendus.

Norme de Diligence
Dans l'exécution des services, le Groupe Acuren Inc. applique le degré de diligence, le soin et la compétence normalement exercés dans des circonstances semblables par d'autres fournisseurs de ce type de services opérant dans la même localité ou dans une localité similaire. Aucune autre garantie, implicite ou explicite, n'est faite ou voulue par le Groupe Acuren Inc.

SIGNATURES			
REPRÉSENTANT		FTJ #	
TECHNICIEN (SIGNATURE)		RAPPORT RÉVISÉ PAR:	
NOM (MOULÉ):	PIERRE-LUC DUFOUR	NOM	INITIALES
	1 ^{ER} TECHNICIEN		
ONGC NIVEAU	2	ONGC NIVEAU	2
ONGC N° REG.	12205	ONGC N° REG.	
	2 ^{EME} TECHNICIEN		

